**Amendments to the Claims:**

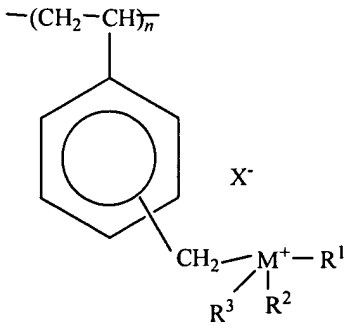
This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (Currently Amended) A solid support for chemiluminescent assays comprising:

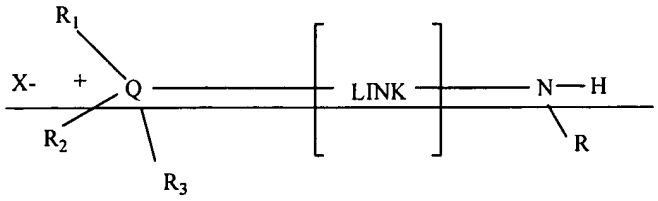
a support ~~layer having first and second opposed major surfaces~~ having a surface;

a chemiluminescent quantum yield enhancing material ~~comprising:~~ on the surface of the support, the chemiluminescent quantum yield enhancing material comprising a quaternary onium polymer having the general formula:




wherein n is a positive integer; $R_1$, $R_2$ and $R_3$ are independently: a straight or branched chain alkyl group having from 1 to 20 carbon atoms optionally substituted with one or more hydroxy, alkoxy, aryloxy, amino or substituted amino, amido, ureido, fluoroalkane or fluoroaryl groups; a monocycloalkyl group having from 3 to 12 carbon ring carbon atoms optionally substituted with one or more alkyl, alkoxy or fused benzo groups; a polycycloalkyl group having 2 or more fused rings, each ring having from 5 to 12 carbon atoms optionally substituted with one or more alkyl, alkoxy or aryl groups; an aryl, alkaryl or aralkyl group having at least one ring and from 6 to 20 carbon atoms optionally

substituted with one or more alkyl, aryl, fluorine or hydroxy groups; wherein at least two of $R_1$, $R_2$ and $R_3$, together with the quaternary nitrogen atom to which they are bonded, can form a saturated or unsaturated, unsubstituted or substituted nitrogen-containing, nitrogen and oxygen-containing or nitrogen and sulfur-containing ring having from 3 to 5 carbon atoms and 1 to 3 heteroatoms and which may be benzoannulated; M is a nitrogen or a phosphorous atom, and $X^-$ represents a counter ion~~; or a quaternary onium compound having the general formula:~~

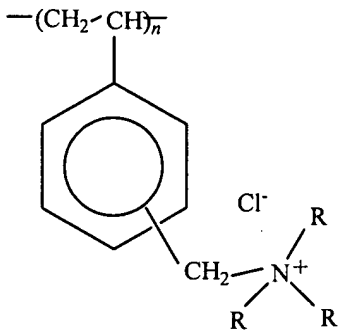



~~wherein Q is N or P ; [LINK] is a divalent linker moiety; $R_1$, $R_2$ and $R_3$ are, independently, an alkyl group, an aryl group or a nitrogen heterocycle; R is hydrogen, an alkyl group, or an aryl group; and $X^-$ is a counterion~~, wherein the chemiluminescent quantum yield enhancing material is present in spatially defined regions on the surface of the support; and

a plurality of immobilized probes for a biopolymer target, wherein the probes are covalently, ionically or physically attached to the ~~first major~~ surface of the support ~~layer~~.

2. (Canceled)

3. (Original) The solid support of Claim 1, wherein the chemiluminescent quantum yield enhancing material comprises a quaternary onium polymer having the general formula:



wherein n is a positive integer and each R is an n-pentyl group.

4-6. (Cancel)

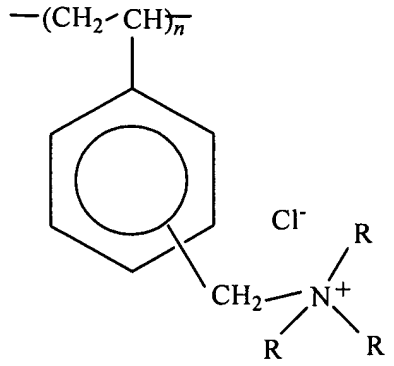
7. (Original) The solid support of Claim 1, wherein the probes are probes for a nucleic acid target.

8. (Original) The solid support of Claim 1, wherein the probes are probes for a protein target.

9. (Currently Amended) The solid support of Claim 1, wherein the support ~~layer~~ comprises a polyamide layer and the probes are covalently attached to a surface of the polyamide layer.

10. (Canceled)

11. (Original) The solid support of Claim 9, wherein the chemiluminescent quantum yield enhancing material comprises a quaternary onium polymer having the general formula:




wherein n is a positive integer and each R is an n-pentyl group.

12. (Original) The solid support of Claim 9, wherein the surface of the polyamide layer comprises electrophilic groups formed by reacting carboxylate groups on the polyamide surface with an activating agent.

13. (Original) The solid support of Claim 9, wherein the surface of the polyamide layer comprises electrophilic groups formed by reacting amine groups on the polyamide surface with an activating agent.

14. (Original) The solid support of Claim 1, wherein the probes are covalently attached by reacting amine groups on the surface with an electrophilic functional group on the probe.

15. (Original) The solid support of Claim 12, wherein the electrophilic groups are selected from the group consisting of ester, acid halide, imidazolide, and anhydride groups.

16. (Original) The solid support of Claim 13, wherein the electrophilic groups are selected from the group consisting of urea, carbamate, dihalocyanurate, isothiocyanate, and isocyanate groups.

17. (Original) The solid support of Claim 9, wherein the probes are covalently attached by reacting electrophilic functional groups on the polyamide surface with nucleophilic functional groups on the probes.

18. (Original) The solid support of Claim 9, wherein the probes are covalently attached by reacting electrophilic groups on the surface of the functionalized polyamide layer with nucleophilic groups on the probes.

19. (Original) The solid support of Claim 18, wherein the nucleophilic groups on the probes are amine groups.

20. (Original) The solid support of Claim 1, wherein the probes are covalently attached to the surface of the solid support in a plurality of discrete regions.

21. (Currently Amended) The solid support of Claim 20, wherein the quantum yield enhancing material is ~~only~~ present in the plurality of discrete regions where the probes are attached to the surface of the solid support.

22. (Currently Amended) A kit for conducting chemiluminescent assays to determine the presence or absence of an analyte, comprising:

a) a dioxetane substrate bearing an enzyme-labile protecting group which, when cleaved, yields a chemiluminescent reporter molecule; and

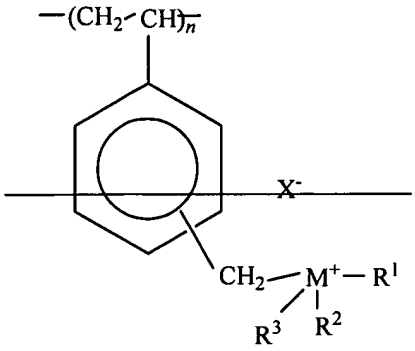
b) an antibody-enzyme complex and/or a nucleic acid probe-enzyme complex, wherein the antibody or nucleic acid probe is specific for the analyte, and wherein the enzyme is capable of cleaving the enzyme-labile protecting group; and

c) [[a]] the solid support of Claim 1,

~~wherein the solid support comprises;~~

~~a support layer having first and second opposed major surfaces;~~

~~a chemiluminescent quantum yield enhancing material comprising a quaternary onium polymer having the general formula:~~



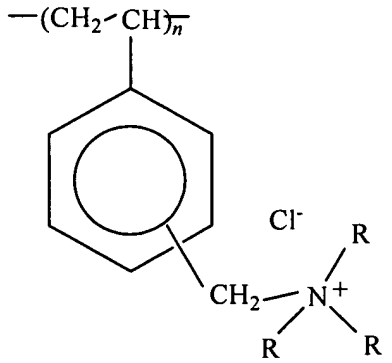

~~wherein n is a positive integer; $R_1$, $R_2$ and $R_3$ are independently: a straight or branched chain alkyl group having from 1 to 20 carbon atoms optionally substituted with one or more hydroxy, alkoxy, aryloxy, amino or substituted amino, amido, ureido, fluoroalkane or fluoroaryl groups; a monocycloalkyl group having from 3 to 12 carbon ring carbon atoms optionally substituted with one or more alkyl, alkoxy or fused benzo groups; a polycycloalkyl group having 2 or more fused rings, each ring having from 5 to 12 carbon atoms optionally substituted with one or more alkyl, alkoxy or aryl groups; an aryl, alkaryl or aralkyl group having at least one ring and from 6 to 20 carbon atoms optionally substituted with one or more alkyl, aryl, fluorine or hydroxy groups; wherein at least two of $R_1$, $R_2$ and $R_3$, together with the quaternary nitrogen atom to which they are bonded, can form a saturated or unsaturated, unsubstituted or substituted nitrogen-containing, nitrogen and oxygen-containing or nitrogen and sulfur-containing ring having from 3 to 5~~

~~carbon atoms and 1 to 3 heteroatoms and which may be benzoannulated; M is a nitrogen or a phosphorous atom; and $X^-$ represents a counter ion; and~~

~~a plurality of immobilized probes for the analyte and wherein the immobilized probes are covalently or physically attached to the first major surface of the support layer~~.

23. (Canceled)

24. (Original) The kit of Claim 22, wherein the chemiluminescent quantum yield enhancing material comprises a quaternary onium polymer having the general formula:



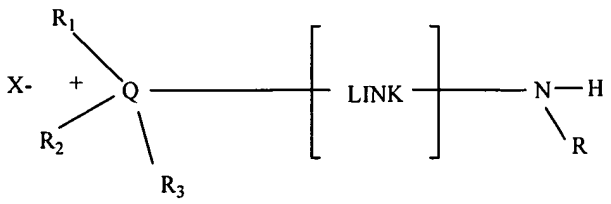

wherein n is a positive integer and each R is an n-pentyl group.

25. (Previously Presented) A method of modifying the surface of a solid support to enhance the quantum yield of chemiluminescent emissions, the method comprising:

reacting a functional group on a quantum yield enhancing compound with functional groups on the solid support surface to covalently attach chemiluminescent enhancing moieties to the solid support surface; and

attaching a plurality of immobilized probes for a biopolymer target to the surface of the solid support prior to binding to the biopolymer target,

wherein the quantum yield enhancing compound comprises a quaternary onium polymer or a quaternary onium compound having the general formula:




wherein Q is N or P ; [LINK] is a divalent linker moiety; $R_1$, $R_2$ and $R_3$ are, independently, an alkyl group, an aryl group or a nitrogen heterocycle; R is hydrogen, an alkyl group, or an aryl group; and $X^-$ is a counterion; and wherein the step of covalently bonding the enhancing moiety to the support surface comprises reacting an amino group on the quaternary onium polymer or the amino group on the quaternary onium compound with functional groups on the support surface.

26. (Original) The method of Claim 25, wherein the functional groups on the solid support surface comprise azlactone groups.

27. (Canceled)

28. (Original) The method of Claim 25, wherein the solid support comprises a polyamide, the method further comprising:

forming the functional groups on the polyamide surface by reacting amine or carboxylate groups on the polyamide surface with an activating agent.

29. (Original) The method of Claim 28, wherein the activating agent is reacted with amine groups and the activating agent is selected from the group consisting of: carbonyl diimidazole; dihydroxysuccinimidyl carbonate; phosgene; and phenylchloroformate.

30. (Original) The method of Claim 28, wherein the activating agent is reacted with carboxylate groups and the activating agent is selected from the group consisting of:

dihydroxysuccinimidyl carbonate; carbodiimides; oxalyl chloride; and carbonyl diimidazole.

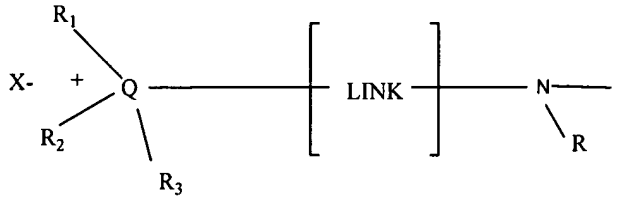
31. (Original) The method of Claim 25, wherein the quantum yield enhancing compound comprises a latent functionality, the method further comprising reacting a functional group on a probe for a biopolymer target with the latent functionality on the quantum yield enhancing compound to covalently attach the probe to the quantum yield enhancing compound.

32-68. (Cancel)

69. (New) A solid support for chemiluminescent assays comprising:

a support having a surface;

a chemiluminescent quantum yield enhancing moiety covalently attached to the surface of the support, the chemiluminescent quantum yield enhancing moiety having the general formula:




wherein Q is N or P ; [LINK] is a divalent linker moiety; $R_1$, $R_2$ and $R_3$ are, independently, an alkyl group, an aryl group or a nitrogen heterocycle; R is hydrogen, an alkyl group, or an aryl group; and $X^-$ is a counterion; and

a plurality of immobilized probes for a biopolymer target, wherein the probes are covalently, ionically or physically attached to the surface of the support.

70. (New) The solid support of Claim 69, wherein the chemiluminescent quantum yield enhancing moiety is present in spatially defined regions on the surface of the planar support.

71. (New) A kit for conducting chemiluminescent assays to determine the presence or absence of an analyte, comprising:

a) a dioxetane substrate bearing an enzyme-labile protecting group which, when cleaved, yields a chemiluminescent reporter molecule; and

b) an antibody-enzyme complex and/or a nucleic acid probe-enzyme complex, wherein the antibody or nucleic acid probe is specific for the analyte, and wherein the enzyme is capable of cleaving the enzyme-labile protecting group; and

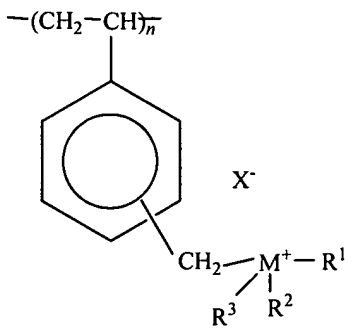
c) the solid support of Claim 69.

72. (New) A solid support for chemiluminescent assays comprising:

a planar support;

a plurality of immobilized probes for a biopolymer target, wherein the probes are covalently, ionically or physically attached to a first surface of the support;

a chemiluminescent quantum yield enhancing material on a second surface of the support opposite the first surface of the support, the chemiluminescent quantum yield enhancing material comprising a quaternary onium polymer having the general formula:



wherein n is a positive integer; $R_1$, $R_2$ and $R_3$ are independently: a straight or branched chain alkyl group having from 1 to 20 carbon atoms optionally substituted with one or more hydroxy, alkoxy, aryloxy, amino or substituted amino, amido, ureido, fluoroalkane or fluoroaryl groups; a monocycloalkyl group having from 3 to 12 carbon ring carbon atoms optionally substituted with one or more alkyl, alkoxy or fused benzo groups; a polycycloalkyl group having 2 or more fused rings, each ring having from 5 to 12 carbon atoms optionally substituted with one or more alkyl, alkoxy or aryl groups; an aryl, alkaryl or aralkyl group having at least one ring and from 6 to 20 carbon atoms optionally substituted with one or more alkyl, aryl, fluorine or hydroxy groups; wherein at least two of $R_1$, $R_2$ and $R_3$, together with the quaternary nitrogen atom to which they are bonded, can form a saturated or unsaturated, unsubstituted or substituted nitrogen-containing, nitrogen and oxygen-containing or nitrogen and sulfur-containing ring having from 3 to 5 carbon atoms and 1 to 3 heteroatoms and which may be benzoannulated; M is a nitrogen or a phosphorous atom, and $X^-$ represents a counter ion.

73. (New) The solid support of Claim 72, wherein the planar support comprises a porous polyamide membrane or an azlactone functional polymer membrane.

74. (New) A kit for conducting chemiluminescent assays to determine the presence or absence of an analyte, comprising:

a) a dioxetane substrate bearing an enzyme-labile protecting group which, when cleaved, yields a chemiluminescent reporter molecule; and

b) an antibody-enzyme complex and/or a nucleic acid probe-enzyme complex, wherein the antibody or nucleic acid probe is specific for the analyte, and wherein the enzyme is capable of cleaving the enzyme-labile protecting group; and

c) the solid support of Claim 72.